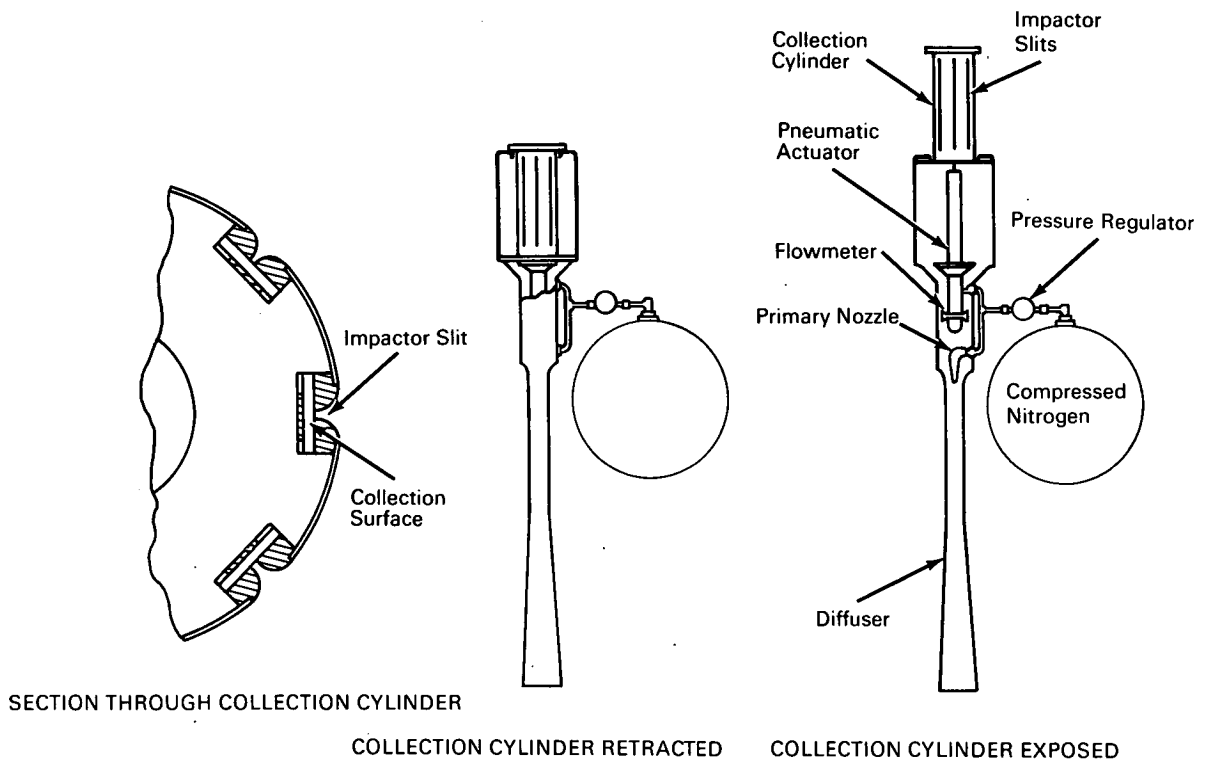


NASA TECH BRIEF



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Air Sampler Collects and Protects Minute Particles



The problem:

To collect and protect samples of particles greater than 0.1 micron in diameter. Such a device should have construction and operational features that would have application in air pollution analysis and in particulate sampling where the environment is hazardous or difficult of access.

The solution:

An air ejector impactor sampler that, in operation, causes impaction of particle-laden air onto several collection surfaces within a collection cylinder. When

not operating, the collector cylinder is maintained in a retracted state within a protective envelope.

How it's done:

An air ejector pump composed of a compressed gas source and associated tubing, valve, and flowmeter, simultaneously valves compressed gas to a nozzle in a diffuser and into a pneumatic actuator. Flow of the gas to the pneumatic actuator extends the collection cylinder into an exposed position from its retracted position. Flow of the gas into the venturi entrains the

(continued overleaf)

surrounding air and produces a reduced pressure within the collection cylinder, resulting in air flow through its impactor slits and particulate impaction upon the collection surfaces within. After the air ejector gas is exhausted or turned off, a spring associated with the pneumatic actuator draws the collection cylinder back into the retracted position to protect the collected particles from undesirable contamination.

Notes:

1. Though designed for collection of extraterrestrial dust at high altitudes, this sampler could be used for particle analysis in many earthbound applications.

2. Inquiries concerning this invention may be directed to:

Technology Utilization Officer
Headquarters
National Aeronautics and Space
Administration
Washington, D.C. 20546
Reference: B67-10661

Patent status:

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C. 20546.

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